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E-governance and the future of innovative public sector organisations

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Introduction

Public administrations worldwide have tried to modernize or create strategies during the last decades, in order to increase their efficiency and effectiveness (OECD: 2011b). Private sector techniques, under the theoretical layer of New Public Management, have for that purpose frequently been used. Despite those efforts, public sector organizations are still under pressure: (1) administrations are facing financial and economic challenges, demographic changes and political constrains and (2) societal expectations - in terms of burden reduction and efficiency of public services - are growing. A possibility to tackle some of those challenges is created by the new technological possibilities, but the public sectors' peculiarities must be taken into account if the implementation of technological possibilities are to be successful.

This article wants to reflect on the role digital evolutions and technological possibilities can play in the challenges public administrations are facing. The focus of public administrations willing to innovate, can be on several elements, and the challenges are multiple: improving effectiveness and efficiency, transforming public administrations processes, understanding the relation between human resources to public sector transformation and supporting adaptation, transforming delivery of public services to business and citizens taking account of diversity (gender, age, disability etc.), the uptake and acceptability of the use of emerging technologies in the public sector, reducing the administrative burden of citizens and businesses; and offering inclusive public services. In every aspect technology can, and probably will, play a role in the near future.

This article is divided in different sections. First, we will describe the current challenges public sector organisations face. Second, the aspect of digital evolutions in the public sector will be analyzed, by looking at lessons from the past regarding E-government projects and by trying to link PA as a discipline with evolutions in technological possibilities and adoptions. Third, our conclusions will be highlighted.

A challenging future

The challenges that the public sector is facing, can be analyzed from different angles. First, the *scope* of the challenges: public administrations are required to tackle new challenges on fundamental issues as demographic change, employment, mobility, security, environment and many others (European Commission, 2013). It seems that on all public policy domains new expectations have been raised. Second, the *nature* of the challenges: citizens today are more aware of their rights, have better access to information on public services and consequently have higher expectations of service

levels, especially as they become accustomed to private sector organisations providing customisation and other benefits. In other words: one could state that citizens are increasingly expecting from the service delivery by the public sector the same easiness and quality they receive from the product delivery by the private market. Citizens and business are therefore expecting better and more individualised public solutions and services, efficient and effective service delivery, burden reduction, transparency and participation. Third, the *timing* wherein the challenges take place: recent economic and budgetary pressures force governments to be more efficient than ever, to reduce costs and to be more competitive. These challenges coupled with the actual financial crisis have created a renewed momentum for the modernisation of public administrations. It is said that, in order to meet these demands, new and creative (innovative) ways have to be found in order to improve quality and to provide customised solutions, while at the same time costs can be reduced (Sørensen and Torfing, 2012).

Fourth, the *technological possibilities* put the challenges in another perspective: the take-up of new technologies leads to increased connectivity and to more personalized services that suits the needs of users. The availability of open data and open services, in an open government setting, supports the collaborative forms of service design and delivery and increases transparency and trust in public administrations. The recent technological innovations such as open data and take up of social media lead to more information and knowledge exchange (Benkler, 2006), as well as enhanced connectivity, openness and transparency on all levels (Margetts and Dunleavy, 2013). Those new developments might trigger the creation, delivery and use of new services on a variety of devices, utilizing new web technologies, coupled with open public data (European Commission, 2013). Moreover, new technological possibilities may reduce the administrative burden of citizens and businesses (e.g. collecting information from citizens only once), and could enhance the public participation in the public policy making and evaluation (for instance, the empowerment of citizens with the implementation of "Right to information" legislation (PriceWaterhouseCoopers Public Sector Research Centre, 2007). Given those rapidly expanding possibilities, innovation and the modernisation of public administrations are considered as important leverages for economic growth and the enhancement of competitiveness.

In this context of challenges, it is easily said that, in order to improve efficiency, effectiveness and quality of public services, the public sector needs to implement new processes, products, services and methods of delivery by adopting new technological possibilities (OECD, 2011; European Commission, 2013; Pollitt, 2014). However, the public sector typically builds on top of an existing way of working, and typically, combines and builds on top of existing technological elements to innovate, and do not have the economic power to apply radically new innovative technologies. This means that

there seems to be a paradox between the possibilities (innovative) technology can offer and the answer public organisations have to provide in terms of E-governance on the challenges they are confronted with.

In this respect two elements seems to be interconnected: E-governance and innovation. E-governance as a concept is often linked to E-government. While *E-government* refers to the use of the internet and IT to deliver government information and services to citizens, thus injecting innovative *practices* in the public sector, *E-governance* can be referred to as an innovation management *process* in the public sector (Pontis, 2009). Given the timing, the scope and the nature of the challenges the public sector faces, this article wants to highlight the impact of IT and technological possibilities on innovative public sector organisations, *not* as the implementation of a *single* technological tool, but as the implementation of new technology (in the large sense of the word) into the service delivery and functioning of public sector organisations. Thus, seeing E-governance as an intrinsic characteristic of innovative public organisations. This article, reflective by nature, wants to discuss those aspects and contribute to the debate about the link between the evolutions of the public sector and E-governance, on which some lessons can be learned. On the basis of the nature of the challenges that public organisations are facing as described above, we will review whether a new digital era is taking place by focusing on two different elements: 1) new possibilities and new expectations, 2) lessons learned from the past. In the next section, the evolutions of E-government are reviewed in the context of the developments of the public sector.

A new digital era in the public sector?

In the context as described above, it is necessary to see where the public sector could be going in the next decades. First, we will describe new possibilities that lies ahead of us; second, we will look into the lessons from the past; third, we will propose a way of linking evolutions in PA as a discipline with evolutions in technology.

1. New possibilities, new expectations

In all OECD-countries NPM reforms have been implemented during the last two decades. However, more recently NPM reforms have been criticized because of effects as fragmentation, diminished coordination, lower social cohesion, or negative consequences on personnel (Hammerschmid, Van de Walle, Oprisor & Stimac, 2013). It seems to be that the NPM debate has moved on. The reforms are now perceived as a variety of interactive forms of governing that is less 'centered' and more

based on interactivity, transparency, collaboration and participation between stakeholders and networks. Although 'New Public Governance' is often used as a new umbrella to define the difference between the new and older modes of governing (Osborne, 2006), there doesn't seem to be a consistent theoretical framework but rather a cluster of principles, such as process focus, co-ordination, participation and co-production (Torfing and Triantafillou, 2012).

Within this new paradigm there also seems to be a raising importance of IT and digital reforms within the public sector, as already highlighted in the former paragraph. But what does this mean concretely? How can we link new evolutions in the PA debate and the statements that are regularly made about the importance of IT in the public sector?

In general, public services are services offered to the general public and/or in the public interest (European Commission, 2013) with the main purpose of developing public value. Public value is in this article considered as the total societal value that cannot be monopolized by individuals, but that is shared by all actors in society and is the outcome of all resource allocation decisions (European Commission, 2008). As public services need to become more efficient, effective and to serve higher quality, governments have to consider innovative new ways of developing and organizing the public sector for creating public value (cfr. Supra). Thus, transformation needs to address the way public value is created (Frissen, Millard, Huijboom, Svava Iversen, Kool, Kotterink, 2007), which is why the emphasis has been put on E-governance and not on single technological adaptions. As already suggested, the future of government is less and less in the hands of governments alone. To some extent, this is what New Public Governance assumes. Technology has empowered ordinary citizens by offering them a way to make their voices heard and challenge government leaders about their ability and willingness to address public concerns and requests (World Economic Forum, 2011). It is no longer governments alone (the visible hand) or the market alone (the invisible hand that will respond to these challenges). Old and new partnerships and groups (many hands) are needed (Millard and Wimmer, 2012). This increased connectivity of citizens and business, the possibility for people to work together, perform tasks and distribute workload regardless of distance and boundaries as well as the availability of previously closed information and data mean that government tasks can, if we take this point radically, also be performed by citizens, companies and others. A possible approach to pursue is therefore triggered by the advent of social media, ubiquitous mobile connectivity and Web 2.0 activities, which allow not just for mass production and collaboration (Linders, 2012). The term 'co-production', as suggested as a characteristic of NPG, is in itself not new; what is new is the ability of this form of citizen and user engagement as a source of innovation and the implementation of new or significantly improved ways of providing public goods and services (OECD, 2011). It is considered that engaging with the wider public can help to meet the

challenge of rising expectations. It will make the services more user-friendly and effective, improve the quality of decision-making, promote greater trust in public institutions and thus enhance public value. As such, one can state that there are indeed new possibilities to encounter new expectations and to tackle future challenges.

The importance and rol of IT in the public sector is not a future-fantastic vision: in 2012, a large scale survey was launched among senior executives in the European public sector in order to know, among other things, what the importance of reform trends at this moment is in their policy field. From that survey it seems to be that senior executives report that digital/e-government is the most important reform trend at this moment, which can only highlight the importance of the 'e'-aspect in the public sector of the future (Hammerschmid, Van de Walle, Oprisor & Stimac, 2013). This only confirms the arguments made above. The question however is how this can be achieved. Therefore it is necessary to see what we can learn from the past.

2. Learning from the past

Together with NPM it seems that the past reforms in E-government haven't delivered the outcomes that were hoped for. Governments around the world have, during the last two decades, invested in ICT with the aim of increasing the quality and decreasing the cost of public services and enhancing the performance of policy and service delivery (Zouridis and Thaens, 2003). Those objectives could easily be fit within a NPM-context. But over that time, as governments have moved to websites, e-services and E-government strategies, it has become increasingly clear that E-government has not delivered all the benefits that were hoped for. Several studies found that numerous E-government projects resulted in total or partial failures (OASIS, 2010). The main question here is what reasons can be found for the failure of E-government as it was conceived in the past. We argue that there are two fundamental reasons: the dominance of the technical perspective of IT and the missing bridge between E-government and public administration as a discipline.

a) Technology first

Since the 1960s governments have invested in technology in order to develop E-government services for the automation of tasks and processes. Basic reasons for this were: paperwork reduction and efficiency increase. The impact on users were at that time indirect and often hidden since the only objective seemed to be a reduction of waiting time for the citizen. ICT was at that time merely perceived as a pure technical tool (OECD: 2009). The last 20 years E-government has become more than that. OECD countries, and to some extent developing countries, have invested substantially in E-government services in order to enhance the quality of the public service. By investing in ICT and

providing public sector organisations the necessary infrastructure the assumption has been that business processes and procedures would steadily gain efficiency and effectiveness and would generate important benefits for all parties concerned (OECD, 2009). In sum: from a theoretical point of view it seems that ICT has been perceived as a mean to achieve the objectives defined by NPM.

However, as already stated, E-government projects have shown important failures, haven't delivered the expected benefits and haven't led to a large scale use of e-government services (Guha and Chakrabarti, 2014;). Important here is that E-government failures are both witnessed in developing countries and developed countries. Some reports claim that 70% to 80% of E-government projects are at least partial failures (Misuraca, 2009). When looking at reports considering the reasons for the lack of goal achievement, the following elements are mentioned as possible causes: insufficient access to electronic infrastructure, a lack of provision of E-government services, the un-awareness of the existence of E-government services, an ineffective organization of E-government services (Bertot, Jaeger, McClure, 2008), a poor level of outcomes of E-government implementation, a lack of trust (OECD, 2009), a lack of e-readiness (Misuraca, 2009), country context gaps and design-reality gaps (Heeks, 2003; Guha and Chakrabarti, 2014).

In our vision those factors of failure can be narrowed down to one issue: it seems that E-government projects to a large extent have put way too much emphasis on technological issues and insufficient on typical change management topics: personnel, context, process, and so on. As the OECD (2009) puts it: "technology has overshadowed the organisational, structural and cultural changes needed in the public sector."

Fortunately, there has been a shift of perspective to 'Transformational Government', aiming beyond purely technical aspects of better enabling E-government processes towards addressing the cultural and organisational barriers which have hindered public service benefits realisation. Researchers have defined the rationale for Transformational Government as "the exploitation of E-government such that benefits can be realized" (Irani, Elliman and Jackson, 2007) to satisfy the (future) demands of the stakeholders. It is stated that E-government must incorporate technological and organizational issues at both governmental and individual citizen level and that a multi-disciplinary approach is essential to the investigation and research of E-government phenomena (Nedović-Budić, Crompvoets, and Georgiadou, 2011). This involves a deep understanding and management of systems, information, policies, processes, security and change (Irani et al., 2007). In other words: this means that the position of E-government should be replaced within the discipline of public administration and should be investigated from the same theoretical angles in order to understand why E-government

projects have been successful or not, and how E-government can positively contribute to new ways of delivering services, a higher efficiency, more effective organizational processes and an important quality increase for organizations and citizens. By doing so the step from E-government projects to real E-governance can be taken.

b) Enclosing E-government within public administration science

The public sector in Europe has been confronted with important technological changes during the last decades (Pollitt, 2014). While the technological possibilities are almost endless, the organisational boundaries are an important bottleneck for E-government projects to succeed (Zouridis and Thaens, 2003). As a result, locating E-government within the discipline of Public Administration has been recognised by scholars as an increasing necessity during the last years:

> "There has long been a significant divorce in the public management field between the practical and empirical centrality of IT and information changes on the one hand and their marginality, indeed almost complete absence, from the central texts of public management theory and the literature on public sector change on the other" (Dunleavy, Margetts, Bastow and Tinkler, 2005).

In order to counteract that 'divorce', it seems to be that the concept E-government has shifted over the years to embed more holistically different organisational features necessary to achieve success in big E-government projects. In the literature the concepts vary from E-government over E-governance, e-service (Zourides and Thaens, 2003), digital era-governance (Dunleavy et al., 2005), transformational E-government (OASIS, 2010) to m-government (mobile government, Misuraca, 2009). As indicated above, those concepts have as a central idea that E-government has failed and that future, more holistic, scenarios are needed if technology wants to be used for the benefit of the whole public sector. In this article the term E-governance is used for that purpose. From that perspective it is necessary to locate E-governance within the field of Public Administration in order to avoid the existence of two different theoretical realities in a world that has both fields more and more connected. It is only then that it will be possible to maximize the benefits of E-governance for the public sector.

If we want to understand more clearly how it comes that organisational, cultural and structural characteristics have been neglected in the adaptation of technology, and the 'divorce' between technology and Public Administration, it is interesting to have a look at the evolution of both. From the point of view of Public Administration, we use as a starting point Osborne's (2006) theoretical

overview to describe afterwards how E-government has evolved towards E-governance as a theoretical concept and where it can be situated in the PA evolution.

Table 1: Evolution of public administrations in terms of several elements (Source: Osborne, 2006)

Paradigm/ key elements	**Theoretical roots**	**Nature of the State**	**Focus**	**Emphasis**	**Relationship to external (non-public) organizational partners**	**Governance mechanism**	**Value base**
Public Administration	Political science and public policy	Unitary	The policy system	Policy implementation	Potential elements of the policy system	Hierarchy	Public sector ethos
New Public Management	Rational/ public choice theory and management studies	Disaggregated	Intra-organizational management	Service inputs and Outputs	Independent contractors within a competitive market-place	The market and classical or neo-classical contracts	Efficacy of competition and the market-place
New Public Governance	Organizational sociology and network theory	Plural and Pluralist	Inter-organizational governance	Service processes and outcomes	Preferred suppliers, and often inter-dependent agents within ongoing relationships	Trust or relational contracts	Neo-corporatist

With respect to this article, it is particularly interesting to highlight Osborne's (2006) point of view regarding NPG:

> "NPG is rooted firmly within organizational sociology and *network* theory and acknowledges the increasingly fragmented and uncertain nature of public management in the twenty-first century […].It has the potential to tap into a more contemporary stream of management theory, concerned with the 'relational organization', than does the output and intra-organizational focus of the NPM. It posits both a plural state, where *multiple inter-dependent* actors contribute to the delivery of public services and a pluralist state, where multiple processes inform the policy making system. As a consequence of these two forms of plurality, its focus is very much upon *inter-organizational relationships* and the governance of processes, and it stresses *service effectiveness and outcomes*. Further, it lays emphasis on the design and evaluation of enduring inter-organizational relationships, where *trust, relational capital and relational contracts* act as the core governance mechanisms (Bovaird 2006; Teicher et al. 2006). The NPG paradigm has inherent strengths for the study and practice of public administration management. It combines the strengths of Public Administration and the NPM, by recognizing the *legitimacy and interrelatedness of both the policy making and the implementation/service delivery processes*."

This point of view stresses several important elements: inter-organisational networks, inter-connectedness, inter-dependent actors, governance of processes, service effectiveness. Those are all elements that technological innovation pursues and makes possible; even more: those elements touch at the core of what E-governance wants to achieve: cutting boundaries, creating more connectedness and focusing on processes and effectiveness. From that point of view, it seems that Public Administration has come to a theoretical paradigm where technological innovation can fully be integrated as an integral part of Public Administration, which is more than the single implementation of technological products for the benefit of merely efficiency. That is what E-governance is about.

From E-government in NPM to E-governance in NPG

To state our point of view, it is interesting to question what evolution has been witnessed for E-government and if that evolution can fit in Osborne's overview? Finger and Pécoud (2003) have, in 2003 already, identified four stages regarding the use of new ICT in the operations of the state. First, they state that ICT has long been used for the transformation of operations to the digitalization of the interface with the customer, which is defined as *substitution*. The numerous applications of e-

taxis, e-services, e-voting, and so on are merely the digitalization of the regular operations of the state. Other authors have defined this as 'two-way transactions' where citizens can submit new information themselves (Silcock, 2001). The second stage is *mirroring,* which is the use of ICT, not only for the improvement of the production, but also to improve the customer service. For example, a system of tracking and tracing of a file in the production process. This is comparable to 'multi-purpose portals' or 'portal personalisation', where citizens can cut across department boundaries to receive information or even can customize the portals to their own features (Silcock, 2001). In other words, this second step in E-government deals with the created possibilities on customer-side to use the applications provided. In a third stage, *new services* are created and distributed via the internet or other interfaces. This stage is comparable to what is called the 'clustering of common services' where the portal defines the way citizens organize their transactions with the public sector (Silcock, 2001). For example: one would be able to take statistical information on administrative performance. Interesting is that Finger and Pécoud state that it would no longer be necessary that all those new services would be produced by the public sector. Fourth, *efficient management* of the outsourced or privatized services will become the next step, leading to the fact that most operational activities can be steered and controlled by means of managing the information only. This fourth step assumes privatization to be a central idea, but it might also be possible to keep the services within the public sector but in accordance to the idea of 'a full integration and enterprise transformation' (Silcock, 2001) where technology and information have an important defining role in the organizational structure. The latter isn't absurd, since, already, as Pollitt puts it (2014):

> "technological change has had significant effects on, *inter alia*, the locations of administrative activity, their costs, the nature of administrative tasks, the skill sets needed by officials, rules and regulations, and the types of interactions citizens have with their public authorities"

Now, what does this mean from the perspective of the evolutions in the public sector, taking both evolutions into consideration? One could state that E-government substitution merely took place in the philosophy of the classic Public Administration period, when, citing Osborne (2006) "the state was confidently expected to meet all the social and economic needs of the citizenry, 'from the cradle to the grave'". In that view E-government indeed is used as a mean to optimize certain operations. The second stage of mirroring or multi-purpose portals has more connection with the idea of NPM where IT would not only be used for the benefit of the production, but also for the benefit of the customer service. That is the emphasis that has been claimed on E-government, i.e. that it needed to become more citizen-centered than it used to be (OECD, 2009). The third and fourth step would fit

the idea of NPG, where networking, inter-organisational governance, and the combined work efforts of public and non-public actors are at the core. This is what E-governance would be about.

Taken both Osborne's overview and the stages in E-government-evolution into account, it seems that the future will be different. While the fourth stage as described by Finger and Pécoud seemed to remain technological *possibilities,* but never really implemented given the focus on technology without taking into account organizational, cultural and structural elements, it is, within a NPG-perspective highly plausible that the public sector becomes ready to incorporate technology, not as a tool, but as an integrated organizational aspect: first, from an NPG-perspective, E-governance involves working with citizens, public and non-public actors. All three are necessary to have successful E-government applications or an integrated E-governance. This means that the factors of success for E-governance are now more present in the field of Public Administration than they used to be.

Second, there is a general belief that there will be more emphasis on E-governance in the future, even though the more negative results of E-government projects in the past: the way the public sector looks at E-government might have changed.

Third, the debate on e-Government has become more sophisticated in the past decade as well, "moving from a focus on internal use of the internet in improving efficiencies within government to a more active use of technology as a new way of connecting citizens and government and opening up the policy process" (Curry, 2014).

Fourth, it seems to be that the question is raised, not exactly about the take-up of new technologies, but about the impact and the extent. Will E-governance be a new form of (revolutionary) governance or a new (evolutionary) format for old government practices (Curry, 2014)? Will we indeed move on from E-government practices to E-governance?

Our vision is that NPG and E-governance have become one and the same debate. It is a fact that E-government has long been perceived as merely technological innovation, but the causes of failure are known and the way NPG perceives the public sector can only be realized with the help of technological innovation. It is without a question that E-governance has become a central element in the Public Administration field. Therefore, we suggest to link that element to Osborne's classification, not because IT has become more than ever a mean to achieve objectives, but because IT and technology have become an integral part of the organizational culture, structure and processes and because an innovative public sector can't be different than a public sector with a developed IT stage, as Finger and Pécoud suggest.

Paradigm/ key elements	**Theoretical roots**	**Nature of the State**	**Focus**	**Emphasis**	**Relationship to external (non-public) organizational partners**	**Governance mechanism**	**Value base**	**IT Stage**
Public Administration	Political science and public policy	Unitary	The policy system	Policy implementation	Potential elements of the policy system	Hierarchy	Public sector ethos	Substitution for production efficiency/ Informatisation
New Public Management	Rational/ public choice theory and management studies	Disaggregated	Intra-organizational management	Service inputs and outputs	Independent contractors within a competitive market-place	The market and classical or neo-classical contracts	Efficacy of competition and the market-place	Mirroring for citizen-orientation and two-way transactions
New Public Governance	Organizational sociology and network theory	Plural and Pluralist	Inter-organizational governance	Service processes and outcomes	Preferred suppliers, and often inter-dependent agents within ongoing relationships	Trust or relational contracts	Neo-corporatist	New services and efficient management for needs-orientation/ Digitalization/ Connected effects/large scale computing/open government

Table 2. Linking egovernment evolutions to PA evolutions

To conclude

In the sections above, we have built our argumentation on the following elements: first, that the social, technological and economic changes create challenges and new expectations for public (e-)services. The challenges seem to have become more diverse, broader and have occurred with more urgency. From that perspective, the challenges for the public sector are enormous. At the same time, technological developments have increased the possibilities to counteract those challenges and actually form a potential response to future problems. This means that at the same time new expectations have grown and new possibilities are now probably more present than ever.

Second, the adoption of E-government and technological innovations have not yet been straightforward. Lessons from the past learn that IT can not simply be introduced as such, but must take into account organizational, social, cultural and structural elements. In this new context, the challenges mentioned are largely intertwined, which means that any vision for the future of public (e-) services needs to have a multi-disciplinary approach – even a interdisciplinary approach would be more desirable.

Third, while NPM focused to large extent on intraorganisational management, NPG creates a theoretical framework where E-governance can and probably will take an important role, since it shares a range of objectives and principles. In that perspective the concept of open government based on principles of collaboration, transparency and participation within an appropriate governance framework, comes to the forefront. Such an open government model builds on open data, open services and open decisions. The provision of public e-services would result in the creation of public value. Empowering individually and collectively all actors that play a role in the constitution of society and sharing resources between stakeholders will contribute to the creation of that public value. While traditionally, the role of governments has been recognized as an enabling one, they now also need embrace innovation as a means of driving public value. They need to engage in public entrepreneurship, using a whole range of policy tools to mobilise the untapped resources in and outside of government, support innovation through new, collaborative business models and ultimately drive economic growth (European Commission 2013).

Fourth, E-government as such has also evolved over the years. While E-government projects have been used as single tools for the efficiency of the public sector, the philosophy of NPG makes it possible to adopt E-governance as an integral part of innovative public sector organisations.

To conclude: our vision is that, in the future, governments will more than ever be connected, networked, inter-organisational and fully joined-up and will interact with each other and with private actors, to large extent according to some NPG-principles. This in itself is not revolutionary, but what

is challenging is how the public sector will use and incorporate new technology into its functioning as any other resource, in budgetary difficult times and without jeopardizing the current service delivery. This however will be necessary if public administrations want to take a step forward. It is not surprisingly that public sector managers state that technological innovation will be the biggest challenge for the future.

The services will also be more personalized. This is likely to happen in an open and participative governance structure (Botterman and Millard, 2009), where both administrations and third parties can collaborate and share responsibilities in producing and providing services according to the accepted principles of subsidiarity (Codagnone and Osimo, 2008). Finally, this requires dissolving governmental silos and moving towards a "whole-of-government" approach. For the future, there is a need to continue providing data and public sector information, but also re-usable public services in a way that makes sense to citizens. With the appropriate, flexible and sustainable engagement business model and the right infrastructure, this can increase collaboration, service production and responsible information sharing (IBM, 2012). Interdisciplinary research, combining PA expertise with more technical expertise can play an important role in this matter, and will be useful for the public sector of the future.

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